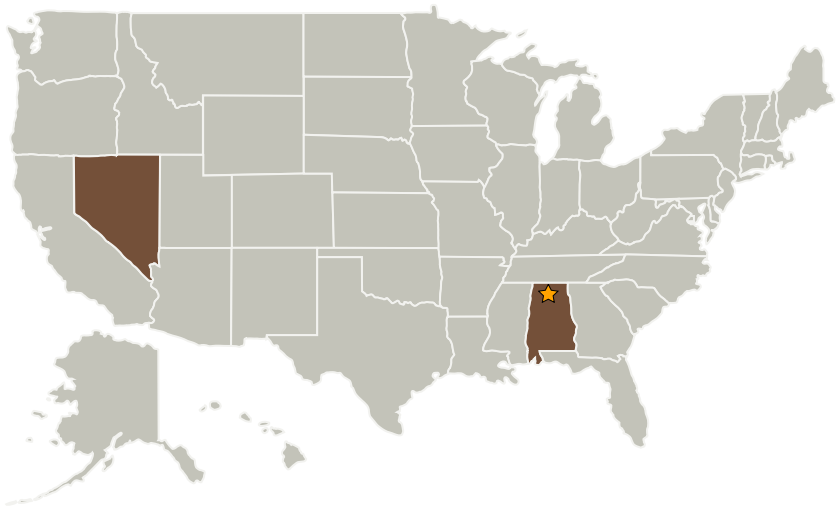
Triaxial Swirler Liquid Injector Development, Phase I

Completed Technology Project (2005 - 2005)

Project Introduction

Sierra Engineering Inc. (Sierra) believes that the subject triaxial liquid propellant swirl injector has the potential to meet many of NASA's Earth-to-Orbit (ETO) propulsion systems goals. The triaxial swirl injector is ideally suited to a wide range of liquid oxidizers and fuels, including hydrogen and a variety of hydrocarbons. It holds the potential of excellent high-frequency combustion stability characteristics, low injector production cost, and deep throttling capabilities similar to a pintle injector. Additionally, this injector offers the potential for excellent thermal compatibility and outstanding propellant atomization characteristics. The concept is well suited for both main chamber and preburner applications. This Phase I SBIR focuses on developing prototype mechanical designs and the supporting analysis necessary to justify fabrication and testing during a follow-on Phase II effort.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Marshall Space Flight Center(MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Sierra Engineering, Inc.	Supporting Organization	Industry	Carson City, Nevada

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Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Alabama	Nevada

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Daniel Greisen

Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.1 Chemical Space Propulsion
    - TX01.1.6 Gels